

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

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## PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43 bis. 1)

Applicant's or agent's file reference		Date of mailing (day/month/year) <b>16 September 2004 (16.09.2004)</b>	
		<b>FOR FURTHER ACTION</b> See paragraph 2 below	
International application No. <b>PCT/RU 2004/000103</b>	International filing date (day/month/year) <b>17 March 2004 (17.03.2004)</b>	Priority date (day/month/year) <b>10 December 2003 (10.12.2003)</b>	
International Patent Classification (IPC-7): <b>F 41 H 11/02</b>			
Applicant <b>ZAKRYTOYE AKTSIONERNOYE OBSHESTVO "STIVT" et al.</b>			

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis. 1 (a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later. For farther options, see Form PCT/ISA/220.

3. For farther details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/RU FIPS Russia, 123995, Moscow, G-59, GSP-5, Berezhkovskaya nab., 30-1 Facsimile No. 243-3337	Authorized officer <p style="text-align: center;"><b>A. Medvedev</b></p> Telephone No. 240-25-91
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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/RU 2004/000103

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims _____ 1-9 _____	YES
	Claims _____	NO
Inventive step (IS)	Claims _____ 1-9 _____	YES
	Claims _____	NO
Industrial applicability (IA)	Claims _____ 1-9 _____	YES
	Claims _____	NO

**2. Citations and explanations:**

While preparing this Examination report, the following documents were taken into account from the Search report:

D1: RU 2108678 C1

D2: DE 4402855 A1

D3: RU 32259 U1

D4: RU 2191406 C1

According to Claim 1, a method for protecting a civil aircraft from missiles with seeker heads of portable anti-aircraft missile complexes.

D1 discloses the method intended for protecting a civil aircraft from missiles with seeker heads of portable anti-aircraft missile complexes by means of creating a false target for protecting civil aircrafts.

D2 discloses the device for hitting an aircraft by means of a laser beam.

D3 discloses the active interference station for protecting an aircraft.

D4 discloses the method for hitting objects by means of laser emission which is generated by a source displaced on board an aircraft.

The method disclosed in the D1 (see abstract) is the closest to the method according to the Claim 1.

The claimed method distinguishes from the method known from the D1 by the following features:

- 1 – determining the fact of a missile launch;
- 2 – determining missile coordinates in every time moment;
- 3 – generating pulse periodic laser radiation;
- 4 – sending the laser radiation to the point of presence of the missile in the given time moment.
- 5 – a wavelength range of the laser radiation is within a sensitivity range of infrared seeker head;
- 6 – a power of the laser radiation exceeds the power of radiation of the aircraft engine in the sensitivity range of the infrared seeker head;
- 7 – a pulse repetition frequency being close to typical operation frequencies of the infrared seeker heads.

A portion of said distinctive features is known, particularly features 2, 4 are known from the D2 (columns 3, 4 of Description, fig. 3),

the feature 5 is known from the D3 (p3 of Description),

the feature 3 is known from the D4 (column 25 paragraph 2 of Description).

Other distinctive features are not known from the prior art and are not obvious, which evidences the fact that Claims 1 and dependent Claims 2 and 3 meet criteria of novelty and inventive step.

The system known from the D1 is also the closest to the system for protecting a civil aircraft from missiles with seeker heads of portable anti-aircraft missile complexes according to the Claim 4.

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**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box No. V

The claimed and known systems have the following common features:

The claimed system distinguishes from the known one by presence of the following features:

- 1 – the system comprises sensors of the fact and coordinates of missile launch;
- 2 – the system comprises a transceiver having a turn drive and an optical channel;
- 3 – the output of the optical channel is connected to a sensor of missile coordinates at a missile flight trajectory;
- 4 – the system comprises an on-board calculator;
- 5 – the system comprises a laser radiation generator having an actuation device;
- 6 – the laser radiation generator is made of fluorine-hydrogen-deuterium type;
- 7 – the on-board calculator is configured to process signals from the sensors of the fact and coordinates of missile launch for calculating coordinates of a missile launch place and for providing a control signal to the turn drive of the transceiver in order for an optical channel of the transceiver to be directed to the launched missile;
- 8 – the on-board calculator is configured to process signals from the sensor of missile coordinates at a missile flight trajectory for calculating missile coordinates in the given time moment and for providing an actuating signal to the actuation device of the laser radiation generator.

The features 2-5 and 8 are known from the D4.

The features 1, 6, 7 are not disclosed in the D2-D4 and are not obvious, hence, the Claim 4 and dependent Claims 5-9 meet criteria of novelty and inventive step.

All Claims meet the criterion of industrial applicability.